KE-4000SDK WG

CASSETTE CAR STEREO
WITH MW FM ELECTRONIC TUNER

SERVICE MANUAL

Note: Model KE-4000SDK/WG is a car stereo with a built-in traffic information decoder based on model KE-4000/E. Therefore, this manual does not detail the printed circuit boards of the front end, switch, sensing and motor P.W. Board units. For these units, please refer to the service manual of model KE-4000/E.

SPECIFICATIONS

General

Power source	DC14.4V (10.8～15.6V allowable)
Grounding system	Negative type
Max. current consumption	1.2A
Power output (max.)	6.5W＋6.5W
(continuous)	4.5W＋4.5W
Load impedance	4Ω (2～8Ω allowable)
Dimensions (W × H × D)	180 × 50 × 150 mm
Nose size (W × H × D)	105 × 42 × 16 mm
Shaft interval	130 mm
Weight	1.8 kg

Tape player

Tape	Compact cassette tape (C-30～C-90)
Tape speed	4.76 cm/sec. (＋0.19 cm/sec. －0.05 cm/sec.)
Fast forward time	Within 100 sec. for C-60
Rewind time	Within 100 sec. for C-60
Wow & flutter	No more than 0.2% (WRMS)
Frequency response	50～12,000 Hz (±3 dB)
Stereo separation	More than 40 dB
Signal-to-noise ratio	More than 45 dB

FM tuner

Frequency range	88～108 MHz
Usable sensitivity	12 dBf (1.1 μV/75Ω)
50 dB quieting sensitivity	17 dBf (1.9 μV/75Ω, mono)
Signal-to-noise ratio	60 dB
Selectivity	70 dB (±400 kHz)
Distortion	0.5% (at 65 dBf, 1 kHz, stereo)
Frequency response	50～12,000 Hz (±3 dB)
Stereo separation	35 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range	525～1,605 kHz
Usable sensitivity	30 μV
Selectivity	30 dB (±9 kHz)

Note:
Specifications and the design are subject to possible modification without noice due to improvements.

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ADJUSTMENT

DECODER ADJUSTMENT

● Connection Diagram

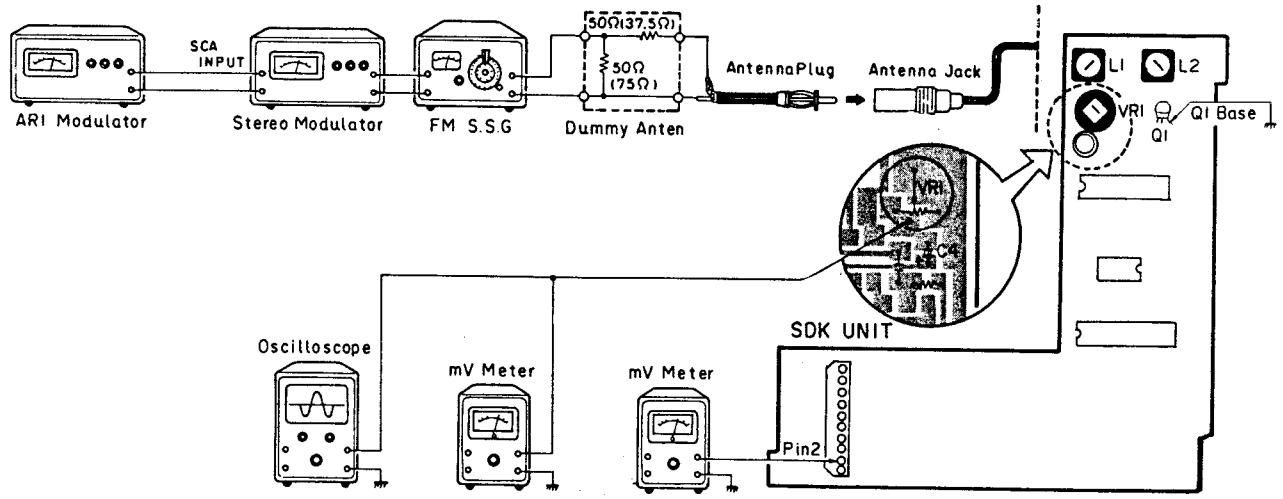

Fig. 1

● To Adjust

1. Set the FM SSG as follows:
   Carrier: 98 MHz
   Modulation (audio): 400 Hz, 60%
   Modulation (SK): 57 kHz, 5%
2. Apply GND to the base of Q1.
3. Adjust the output of SSG so that the amplitude of indicator of mV meter connected to the terminal No. 2 becomes 2.75 mV ~ 3 mV.
4. Adjust L1 and L2 so that the amplitude of indicator of mV meter connected to C4 becomes maximum.
5. Adjust VR1 so that SDK lamp lights on.

TUNER UNIT

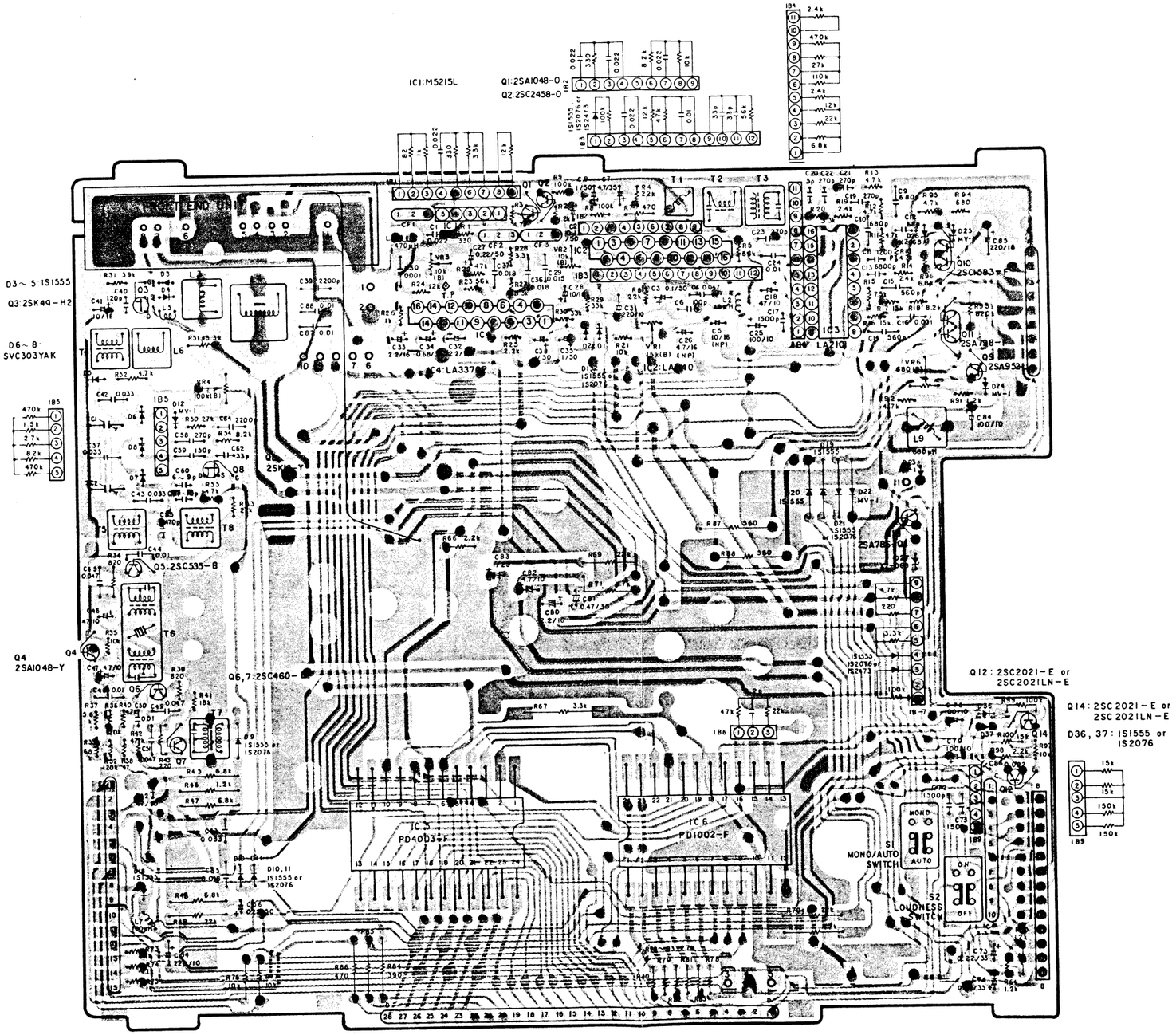

Fig. 1

SDK UNIT (CWX-354)

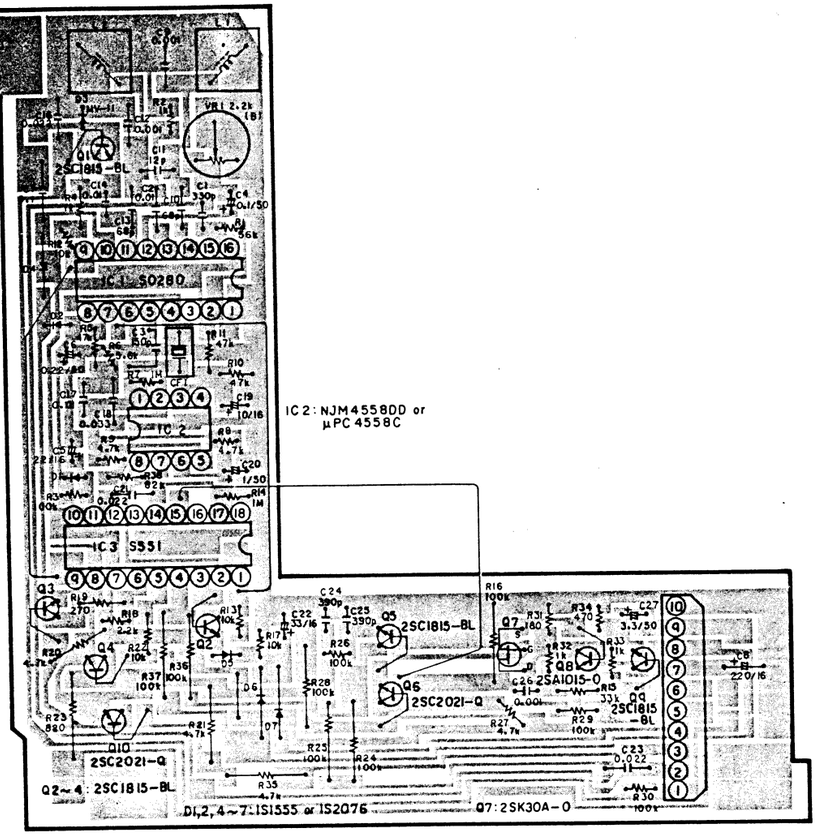

Fig. 3

VOLUME P.W. BOARD

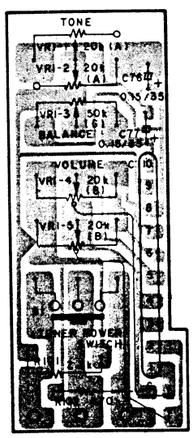

Fig. 4

DISPLAY UNIT (CWS-094)

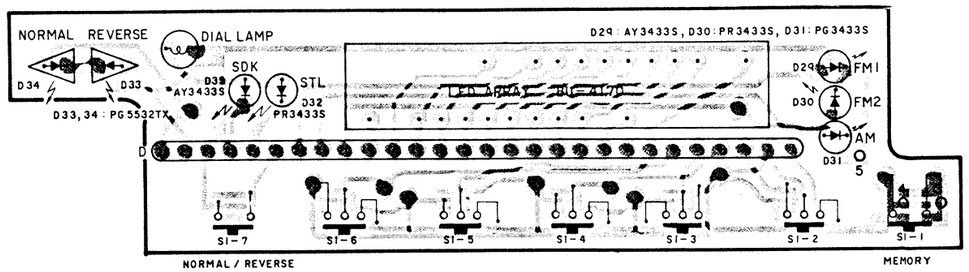

Fig. 5

AMP UNIT

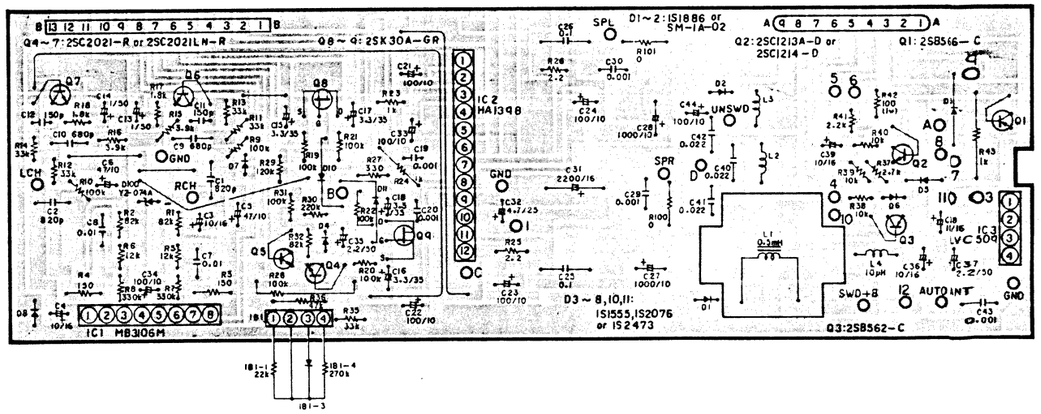

Fig. 6

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SCHEMATIC CIRCUIT DIAGRAM

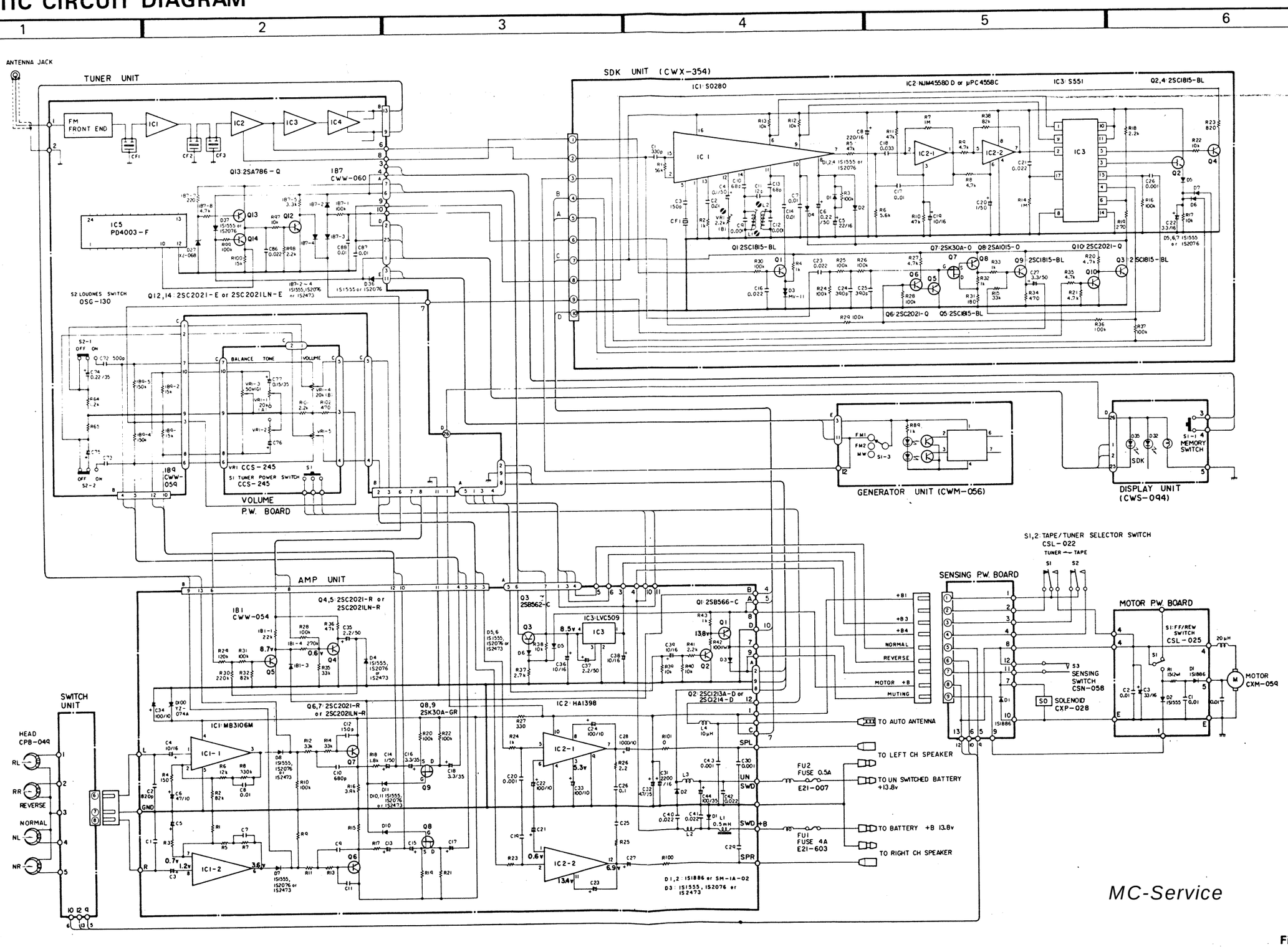

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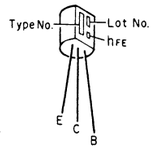
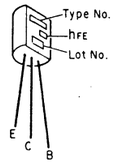
Fig. 7

● IC's and Transistors

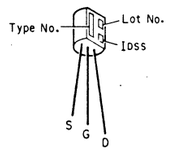
2SC1015
2SC1815



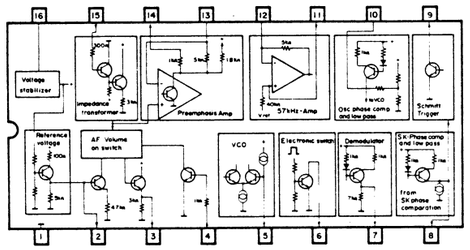
2SB562



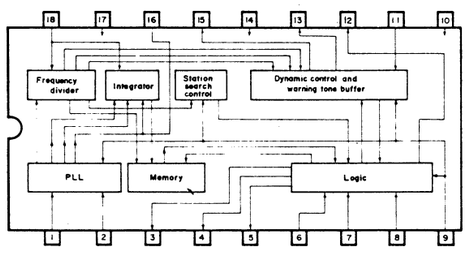
2SK30A



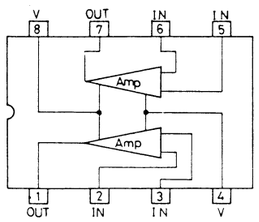
S0280



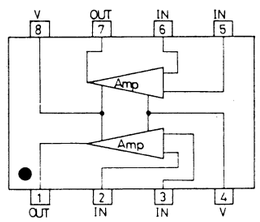
S551



μPC4558C



NJM4558D



MC-Service

PARTS LIST

NOTE:
When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56×10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47×10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562×10¹*	*RN1/4SR*	*5 6 2 1 F*

● *Parts whose parts numbers are omitted are subject to being not supplied.*

Tuner Unit

MISCELLANEOUS

Part No.	Symbol & Description	
M5215L	IC1	
LA1140	IC2	
LA2101	IC3	
LA3370P	IC4	
PD4003-F	IC5	
PD1002-F	IC6	
2SA1048	Q1	
2SC2458	Q2	
2SK49-H2	Q3	
2SA1048	Q4	
2SC535-B	Q5	
2SC460-B	Q6, Q7	
2SK19-Y	Q8	
2SA952	Q9	
2SC1583	Q10	
2SA798	Q11	
2SC2021 or 2SC2021LN	Q12, Q14	
2SA786	Q13	
1S1555 or	D1, D2, D9 — D11, D21, D36, D37	
1S2076		
1S1555	D3 — D5, D18 — D20	
SVC303YAK	*D6 — D8	
MV-1	D12, D22 — D25	
VACANT	D13 — D17	
XZ-062	D26	
XZ-068	D27	
VACANT	D28 — D35	
CTH-063	L1	Coil, 470 μH
CTF-016	L2	Ferri-Inductor, 15 μH
CTB-095	L3	Coil, 33 μH
CTH-049 or CTH-057	L4	Coil
CTB-081	L5	Coil, 2.2 μH
CTF-108	L6	Coil, 220 μH

Part No.	Symbol & Description	
T24-030	L7	Ferri-Inductor, 100 μH
VACANT	L8	
CTC-094	L9	Coil, 680 μH
CTC-119	T1	Coil
CTC-120	T2	Coil
CTC-121	T3	Coil
CTB-072	T4	Coil, 210 μH
CTB-073	T5	Coil, 210 μH
CTE-108	T6	IF Transformer
CTB-075	T7	Coil
CTB-080	T8	Coil, 120 μH
CTF-040	CF1 — CF3	Ceramic Filter
CCP-146	VR1	Semi-fixed, 15 kΩ(B)
CCP-145	VR2, VR3	Semi-fixed, 10 kΩ(B)
CCP-081	VR4	Semi-fixed, 100 kΩ(B)
VACANT	VR5	
CCP-051	VR6	Semi-fixed, 680Ω(B)
CCG-030	TC1, TC2	Ceramic Trimmer, 20 pF
CWW-061	IB1	
CWW-062	IB2	
CWW-063	IB3	
CWW-064	IB4	
CWW-065	IB5	
CWW-056	IB6	
CWW-060	IB7	
VACANT	IB8	
CWW-059	IB9	
CSG-130	S1, S2	Switch

PARTS LIST

RESISTORS

Part No.	Symbol & Description	
RD1/4VM□□□J	R1 – R6, R9 – R43, R51 – R55, R93 – R96	
RD1/4PM□□□J	R7, R8, R45 – R49, R67, R84 – R86	
CCN-054	R50	27 kΩ/1/4W
RD1/6PS□□□J	R64 – R66, R73 – R83, R97 – R100	
CCN-085	R69, R70	22 kΩ/1/4W
CCN-086	R71, R72	4.7 kΩ/1/4W
RD1/2PS□□□J	R87, R88	
CCN-034	R91	1.2 kΩ/1/4W
CCN-052	R92	4.7 kΩ/1/4W
VACANT	R44, R56 – R63, R68, R89, R90	

CAPACITORS

Part No.	Symbol & Description
CKPVYY223N16	C1, C86
CEA0R1M50LL	C2, C3
CKDBC473M25	C4, C45, C49, C51
CEA100M16NP	C5
CCPVSL101J50	C6
CEA4R7M35LL	C7
CEA010M50LL	C8, C35, C38
CKDSA681J50	C9, C10
CQMA122J50	C11
CKDSA680J50	C12
CQMA682J50	C13
CKDSA561J50	C14, C15
CKDSA102J50	C16
CQMA152K50	C17, C72, C73
CEA470M10L	C18, C46, C47
CKDSA271J50	C19, C21 – C23
CCDSL050D50	C20
CQMA103K50	C24
CEA101M10L	C25, C78, C79, C84
CEA4R7M16NP	C26
CEAR22M50LL	C27, C56
CEA100M16L	C28, C41
CQMA153K50	C29
CQSAH102J50	C30
CEA221M10L	C31, C54, C84
CSZA2R2M16	C32, C33
CSZAR68M35	C34
CQMA183J50	C36, C37
CKDYB222K50	C39, C64
CKDYB121K50	C40
CQMA333K50	C42, C43, C53, C57
CKDYD103M50	C44
CKDYF103Z50	C48
CKDBB103M25	C50
CEA470M10LL	C52
CQMA183K50	C55
CCDPH271J50L	C58
CCDPH151J50L	C59
CCDCH060D50 or CCDCH070D50 or	*C60
CCDCH080D50 or CCDCH090D50	
CCDWK100F50	C61
CCDVK330J50	C62
CKDYB471K50	C63
VACANT	C65 – C71, C76, C77
CSZAR22M35	C74, C75
CSZA2R2M16	C80
CSZAR47M35	C81
CSZA4R7M10	C82
CSZA010M25	C83
CEA221M16L	C85
CKDYF103Z50L	C87, C88

Caution:
Diodes *D6-D8 and capacitor *C60 used mutually in the following assembly.

D6-D8	C60
SVC303YAK-25	CCDCH060D50
SVC303YAK-24	CCDCH070D50
SVC303YAK-23	CCDCH080D50
SVC303YAK-22	CCDCH090D50

SDK Unit (CWX-354)

MISCELLANEOUS

Part No.	Symbol & Description	
S0280	IC1	
NJM4558DD or μPC4558C	IC2	
S551	IC3	
2SC1815	Q1 – Q5, Q9	
2SC2021	Q6, Q10	
2SK30A-O	Q7	
2SA1015	Q8	
1S1555 or 1S2076	D1, D2, D4 – D7	
MV-11	D3	
CTF-125	L1, L2	
CTF-109	CF1	Ceramic Resonator
CCP-094	VR1	Semi-fixed, 2.2 kΩ(B)

PARTS LIST

RESISTORS

Part No.	Symbol & Description
RD1/4VM□□□J	R1 – R15, R17 – R20, R22, R26, R27, R29 – R34, R38
RD1/4PM□□□J	R16, R21, R23 – R25, R28, R35 – R37

CAPACITORS

Part No.	Symbol & Description
CKDYB331K50L	C1
CKDYF103M50L	C2
CQSAH151J50	C3
CEA0R1M50LL	C4
CEA220M16L	C5
CEAR22M50LL	C6
CQMA104K50	C7
CEA221M16L	C8
CQSAH102J50	C9, C12
CCDLH680K50L	C10, C13
CCDLH120K50L	C11
CKDBB103M25	C14
VACANT	C15
CKDBC223M25	C16, C21, C23
CQMA103J50	C17
CQMA333J50	C18
CEA100M16L	C19
CEA010M50L	C20
CEA330M16L	C22
CKDYB391K50L	C24, C25
CKDBC102M25	C26
CEA3R3M50L	C27

Volume P.W. Board

Part No.	Symbol & Description	
CCS-245	VR1/S1	Volume/Switch 20 kΩ(A), 50 kΩ(G), 20 kΩ(B)
RD1/6PS□□□J	R101, R102	
CSZAR15M35	C76, C77	

Display Unit (CWS-094)

Part No.	Symbol & Description	
BU-4170	LED	
AY3433S	D29, D35	
PR3433S	D30, D32	
PG3433S	D31	
PG5532TX	D33, D34	
CEL-089	IL1	Lamp, 14V 40 mA

Amp Unit

MISCELLANEOUS

Part No.	Symbol & Description	
MB3106M	IC1	
HA1398	IC2	
LVC509	IC3	
2SB566	Q1	
2SC1213A-D or 2SC1214-D	Q2	
2SB562	Q3	
2SC2021 or 2SC2021LN	Q4 – Q7	
2SK30A	Q8, Q9	
1S1886 or SM-1A-02	D1, D2	
1S1555 or 1S2076	D3 – D8, D10, D11	
VACANT	D9	
YZ-074A	D100	
CTF-002	L1	Coil, 0.5 mH
CTF-003	L2	Coil, 15 μH
T24-030	L3	Ferri-Inductor, 100 μH
CTH-035	L4	Coil, 10 μH
CWW-054	IB1	

RESISTORS

Part No.	Symbol & Description	
RD1/6PS□□□J	R1 – R22, R29 – R32, R36	
RD1/4VM□□□J	R23 – R27, R35, R37 – R41	
RD1/4PM□□□J	R28, R43	
RS1P□□□K	R42	
CCN-056	R100, R101	0Ω
VACANT	R33, R34	

CAPACITORS

Part No.	Symbol & Description	
CKDYB681K50	C1, C2, C9, C10	
CEA100M16LL	C3, C4	
CEA470M10LL	C5, C6	
CQMA103K50	C7, C8	
CKDYB221K50L	C11, C12	
CEA010M50LL	C13, C14	
CEA3R3M35LL	C15 – C18	
CKDYB102K50L	C19, C20	
CEA101M10L	C21 – C24, C33, C34	
CQMA104K50	C25, C26	
CCH-046	C27, C28	1000 μF/10V
CQMA102K50	C29, C30, C43	
CCH-050	C31	2000 μF/16V or 2200 μF/16V
CSZA4R7M25	C32	

PARTS LIST

Part No.	Symbol & Description
CEA2R2M50LL	C35, C37
CEA100M16L	C36, C38, C39
CKDYF223Z50	C40 – C42
CEA101M35L	C44

EXPLODED VIEW

Cabinet (Page 32)

KE-4000/E			KE-4000SDK/WG	
Key No.	Part No.	Description	Description	Part No.
5.	CEA-404	Panel	CEA-410	Panel
11.	CXC-090	Grille Assy	CXC-092	Grille Assy

Chassis (Page 32)

KE-4000/E			KE-4000SDK/WG	
Key No.	Part No.	Description	Part No.	Description
1.	CWK-231	Amp Assy	CWK-232	Amp Assy
3.	CDE-766	Connector	CDE-774	Connector
			CDE-773	Connector (to SDK Unit)
5.	CNE-368	Tuner Assy	CNE-369	Tuner Assy
45.	CWS-093	Display Unit	CWS-094	Display Unit
			AY3433S	LED (SDK Indicator)
			CWX-354	SDK Unit
			CKS-112	Plug, 10P (SDK Unit)

Packing Method (Page 33)

KE-4000/E			KE-4000SDK/WG	
Key No.	Part No.	Description	Part No.	Description
1.	CRD-135	Owner's Manual	CRB-385	Owner's Manual
2.	CRD-134	Owner's Manual	———	Deleted
4.	CEA-404	Panel	CEA-410	Panel
6.	E36-622	Polyethylene Bag	CEG-140	Polyethylene Bag
11.	CHB-897	Carton	CHB-909	Carton